

The opinion in support of the decision being entered today was *not* written for publication and is *not* binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* PIERRE-ALAIN DARLET

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Appeal 2007-0224  
Application 09/754,785  
Technology Center 2100

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Decided: May 23, 2007

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Before JOSEPH F. RUGGIERO, ALLEN R. MACDONALD, and  
ST. JOHN COURTENAY, III, *Administrative Patent Judges*.

COURTENAY, *Administrative Patent Judge*.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134(a) from the Examiner's rejection of claims 1-60.

## THE INVENTION

The disclosed invention is directed to a method and system for receiving a software module, the software module including references, where at least some of the references are backward references. The method includes reordering the software module to remove at least some of the backward references. An alternate disclosed embodiment provides a method and system for receiving a software module sequentially. The software module has at least one symbol reference. The method further includes loading the software module into a target memory space and resolving the symbol references in the software module without storing the entire software module in local memory while the symbol references are resolved (Specification 3).

Representative claims 1 and 16 are illustrative:

1. A method, comprising:
  - receiving a software module, the software module including references to locations within the software module, at least some of the references being backward references; and
  - reordering components of the software module to remove at least some of the backward references.
  
16. A method, comprising
  - receiving a software module sequentially, the software module having at least one symbol reference;
  - linking the software module onto a target memory space; and
  - resolving the at least one symbol reference without storing the entire software module in local memory while the symbol reference is resolved.

### THE REFERENCES

The Examiner relies upon the following references as evidence of anticipation and unpatentability:

John Levine, *Linkers and Loaders, Chapter 6*, June 1999, available at <http://www.ieee.com/linker/linker06.txt>, 9 pages, (last visited Aug. 15, 2005).

Breslau

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The Examiner refers to the following reference as extrinsic evidence not relied upon:

Glen Overby, *Upgrading Your Minix System*, (1990), available at <http://www.funet.fi/pub/minix/unsorted/upgrading.txt> 10 pages, (last visited Jan. 12, 2006).

### THE REJECTIONS

The following rejections are on appeal before us:

1. Claims 1-41, and 43-60 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Levine.
2. Claim 42 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over the teachings of Levine in view of Breslau.

Rather than repeat the arguments of Appellant or the Examiner, we make reference to the Briefs and the Answer for the respective details thereof.

### OPINION

Only those arguments actually made by Appellant have been considered in this decision. It is our view, after consideration of the record

before us, that the evidence relied upon supports the Examiner's rejection of the claims on appeal. Accordingly, we affirm. In addition, we have *sua sponte* set forth new grounds of rejection for claims 1-15, 40, 41, and 43-56 under 36 U.S.C. § 101 pursuant to our authority under 37 C.F.R. § 41.50(b).

Claims 1-15, 38, and 40, 41, and 43-60

We consider first the Examiner's rejection of claims 1-15, 38, 40, 41, and 43-60 as being anticipated by Levine. Since Appellant's arguments with respect to this rejection have treated these claims as a single group which stand or fall together, we will select independent claim 1 as the representative claim for this rejection because it is the broadest independent claim from this group. *See* 37 C.F.R. § 41.37(c)(1)(vii)(2004).

Appellant argues that Levine does not disclose the claimed step of "reordering components of the software module to remove at least some of the backward references" (Br. 10, Claim 1). In particular, Appellant argues that Levine does not describe a method of placing a section header of an exemplary software module in a more convenient location to eliminate the need for a link/loader to transition back-and-forth within the software module during the linking process. Appellant further argues that the sorting, or reordering, performed by the Levine reference is of extracted symbols and just allows for the rearrangement of a symbol directory within an archive library. Appellant concludes that reordering extracted *symbols* is not equivalent to reordering *components* of the software module, as claimed (Br. 10, emphasis added).

The Examiner disagrees. In particular, the Examiner argues that Appellant is arguing limitations found in the Specification, but not claimed. The Examiner further argues that Appellant's Specification fails to set forth a definition of the recited "components" with "reasonable, clarity, deliberateness, and precision" that would render the incorporation of such a definition into the claims appropriate (*quoting In re Paulsen*, 30 F.3d 1475, 1480, 31 USPQ2d, 1671, 1674 (Fed. Cir. 1994)). Therefore, the Examiner concludes that the limitations of claim 1 cannot be properly construed to require the rearrangement of headers, sections, tables, and various other components to convert a software module for efficient linking and loading (Answer 4-5).

In rejecting claims under 35 U.S.C. § 102, a single prior art reference that discloses, either expressly or inherently, each limitation of a claim invalidates that claim by anticipation. *Perricone v. Medicis Pharm. Corp.*, 432 F.3d 1368, 1375-76, 77 USPQ2d 1321, 1325-26 (Fed. Cir. 2005) (citing *Minn. Mining & Mfg. Co. v. Johnson & Johnson Orthopaedics, Inc.*, 976 F.2d 1559, 1565, 24 USPQ2d 1321, 1326 (Fed. Cir. 1992)). Anticipation of a patent claim requires a finding that the claim at issue "reads on" a prior art reference. *Atlas Powder Co. v. IRECO, Inc.*, 190 F.3d 1342, 1346, 51 USPQ2d 1943, 1945 (Fed. Cir. 1999) ("In other words, if granting patent protection on the disputed claim would allow the patentee to exclude the public from practicing the prior art, then that claim is anticipated, regardless of whether it also covers subject matter not in the prior art.") (internal citations omitted).

After carefully considering the evidence before us, we agree with the Examiner that the language of the claim broadly but reasonably *reads on* Levine's disclosure in the manner set forth in the Answer. We note that Levine discloses the notoriously well known "ar," "lorder," and "tsort" UNIX®/Linux utilities used in combination as follows:

*Tsort* did a topological sort on the output of *lorder*, producing a sorted list of files so each symbol is defined after all the references to it, allowing a single sequential pass over the files to resolve all undefined references.

The output of *lorder* was used to control *ar*.  
(Levine 5, emphasis added).

As further explained by the Overby reference (provided by the Examiner as extrinsic evidence), the output of the *lorder* utility is provided as an input to the *tsort* utility to create a library ordering with no backward references:

Two utilities are required to create a library order: *lorder* and *tsort*. *Lorder* creates a dependency list, that is, a list of what functions are required by what other functions. *Tsort* takes the output of *lorder* and does a "topological sort" to create an ordering with no backwards references.  
(Overby 4, emphasis added).

In response to Appellant's argument that reordering extracted symbols is not equivalent to reordering software module components, we agree with the Examiner that a broad but reasonable interpretation of the recited "components" *reads on* "symbols" as found in a symbol table or directory (i.e., where a "symbol" represents an address of a procedure, function, or other code entry point). Indeed, when we look to Appellant's Specification

for *context*, we find Appellant broadly discloses: “The software module may have a number of *components*, including headers, sections of various types, and string tables, described in more detail below” (Specification 6, ll. 27-28, emphasis added). When we further examine the Specification for more detail, we find Appellant explicitly discloses a table (i.e., “Entry point table 350”) that “may include a symbol index 351 that may reference an entry in the symbol table 390” (Specification 7, ll. 24-25). Thus, we find the Examiner has properly construed the language of the claim by applying the broadest reasonable interpretation consistent with the Specification. *See In re Hyatt*, 211 F.3d 1367, 1372, 54 USPQ2d 1664, 1667 (Fed. Cir. 2000) (“During patent examination, the pending claims must be given their broadest reasonable interpretation consistent with the specification.”). Therefore, we find the Levine reference does “[reorder] components of the software module to remove at least some of the backward references,” as claimed.

We further agree with the Examiner that Appellant is arguing limitations that are not claimed. A basic canon of claim construction is that one may not read a limitation into a claim from the written description. *Renishaw plc v. Marposs Societa' per Azioni*, 158 F.3d 1243, 1248, 48 USPQ2d 1117, 1120 (Fed. Cir. 1998). Patentability is based upon the claims. “It is the claims that measure the invention.” *SRI Int'l v. Matsushita Elec. Corp. of America*, 775 F.2d 1107, 1121, 227 USPQ 577, 585 (Fed. Cir. 1985) (*en banc*). In the instant case, we find the argued “method of [sic] placing a section header of an exemplary software module in a more convenient location” is not found in the claim (*See Br. 10*). Because we find

Levine discloses all that is claimed, we will sustain the Examiner's rejection of representative claim 1 as being anticipated by Levine.

We note Appellant argues independent claims 9, 38, and 55 are allegedly patentable over the prior art of record for essentially the same reasons previously argued for independent claim 1 (Br. 11, 13, 14). Pursuant to 37 C.F.R. § 41.37(c)(1)(vii), we have decided the appeal with respect to claims 2-15, 38, 40, 41, and 43-60 on the basis of the selected claim alone. Therefore, we will sustain the Examiner's rejection of these claims as being anticipated by Levine for the same reasons discussed *supra* with respect to representative claim 1.

#### Claims 16-37 and 39

We consider next the Examiner's rejection of claims 16-37 and 39 as being anticipated by Levine. Since Appellant's arguments with respect to this rejection have treated these claims as a single group which stand or fall together, we will select independent claim 16 as the representative claim for this rejection because it is the broadest independent claim from this group. *See* 37 C.F.R. § 41.37(c)(1)(vii)(2004).

Appellant argues that Levine fails to disclose the method of linking the software module onto a target memory space or using symbol resolution *without storing the entire software module in local memory* (Br. 11, emphasis added). Appellant further argues that Levine does not describe the saving of the software module, the amount of the software module saved, nor the location of where the software module is saved (Br. 12).



The Examiner disagrees. In particular, the Examiner notes that the *lorder* and *tsort* functions allow the resulting library to be organized to allow a single sequential pass over the files to resolve all undefined references (*See* Levine, p. 5). During this sequential pass, the linker will include the appropriate object files (*Id.* at p. 6). Thus, the Examiner concludes that there is *no need to store the entire module in memory* during this single sequential pass because the linker only has to search forward (sequentially) through the library (Answer 7-8, emphasis added).

We find the recited step of “receiving a software module sequentially, the software module having at least one symbol reference” is disclosed by Levine, as follows (*see also* discussion of claim 1, *supra*):

Tsort did a topological sort on the output of lorder, producing a sorted list of files so each *symbol* is defined after all the references to it, allowing a single *sequential* pass over the files to resolve all undefined references.  
(Levine 5, emphasis added).

With respect to the recited limitation of “linking the software module onto a target memory space,” we find that Levine inherently links the software module onto a target memory space. We note that Levine discloses UNIX® libraries created with the “ar” command that is used to combine files into archives (Levine 5). We find the archived library files are necessarily stored somewhere in computer storage (e.g., on a disk drive, or in memory).

We acknowledge that Levine fails to expressly disclose the recited functional language of “resolving the at least one symbol reference *without storing the entire software module in local memory while the symbol*

*reference is resolved*” (Claim 16, emphasis added). Nevertheless, after closely examining the Levine reference in its entirety, we find Levine explicitly discloses “modern UNIX systems” that execute on a “64-bit architecture” (Levine, pp. 2 and 4). Thus, we find Levine discloses, in at least one embodiment, a computer *structure* having a “64-bit architecture” that runs a version of the UNIX® operating system (*id.*). In particular, we note that our reviewing court has determined that the absence of a disclosure relating to function does not defeat a finding of anticipation if all the claimed structural limitations are found in the reference. *In re Schreiber*, 128 F.3d 1473, 1477, 44 USPQ2d 1429, 1431 (Fed. Cir. 1997).

In *Schreiber*, the court held that a funnel-shaped oil dispenser spout anticipated a claimed conical-shaped popcorn dispensing top, even though the function of popcorn dispensing was not taught by the reference, because the reference met all the structural limitations of the claim. *In re Schreiber*, 128 F.3d at 1479, 44 USPQ2d at 1433. Here, we have found *supra* that Levine inherently discloses the claimed *target memory space*. We further find that Levine inherently discloses the claimed *local memory* as required for execution of a UNIX® linker and associated *lorder*, *tsort*, and *ar* utilities. Thus, we find that a computer having a “64-bit architecture” (i.e., a *structure* including a *target memory space* and *local memory*) is clearly *capable of* performing the recited negative functional limitation of “resolving the at least one symbol reference *without storing the entire software module in local memory while the symbol reference is resolved*” (Claim 16, emphasis added). Accordingly, we find that Levine anticipates independent claim 16 because the absence of a disclosure relating to

function does not defeat a finding of anticipation if all the claimed structural limitations are found in the reference. *See In re Schreiber*, 128 F.3d at 1479, 44 USPQ2d at 1433.

Appellant argues that independent claims 23, 36, and 39 are allegedly patentable over the prior art of record for essentially the same reasons previously argued for independent claim 16 (Br. 12-14). Pursuant to 37 C.F.R. § 41.37(c)(1)(vii), we have decided the appeal with respect to claims 17-37 and 39 on the basis of the selected claim alone. Therefore, we will sustain the Examiner's rejection of these claims as being anticipated by Levine for the same reasons discussed *supra* with respect to representative claim 16.

#### Dependent claim 42

Lastly, we consider the Examiner's rejection of dependent claim 42 as being unpatentable over the teachings of Levine in view of Breslau.

Appellant argues that Breslau does not supply the deficiencies allegedly present in Levine (Br. 18).

We see no deficiencies with respect to Levine, as discussed *supra*. We find Breslau specifically discloses that object modules to be linked may reside on local or remote computer systems (i.e., different computer systems) (col. 4, ll. 11-20). Therefore, we agree with the Examiner that Levine, as modified by Breslau, teaches all that is claimed (i.e., "transferring the reordered software module to a different computer system; and linking the reordered software module on the different computer

system”) (Claim 42). Accordingly, we will sustain the Examiner’s rejection of claim 42 as being unpatentable over Levine in view of Breslau.

## ANALYSIS - NEW GROUND OF REJECTION

### A. *New Ground Of Rejection Under 35 U.S.C. § 101*

(1)

#### *Introduction*

We use our authority under 37 C.F.R. § 41.50(b) to enter a new ground of rejection of claims 1-15, 40, 41, and 43-56. The basis for each is set forth in detail below.

(2)

#### *Rejection of claims 1-15, 40, 41, and 43-56 under 35 U.S.C. § 101*

Claims 1-15, 40, 41, and 43-56 are rejected under 35 U.S.C. § 101 because the claimed invention is directed to non-statutory subject matter. Independent claim 1 reproduced *supra* is representative.

(a)

#### *Additional Claim Construction*

For purposes of this decision, under a broadest reasonable interpretation, Appellant’s claims 1-15, 40, 41, and 43-56 do not require computer-implementation. Indeed, when we look to the Specification for *context*, Appellant discloses: “The software module may have a number of *components*, including headers, sections of various types, and string tables, described in more detail below” (Specification 6, ll. 27-28). Therefore, we

find the instant claimed *components* are software and/or data structures, per se.

The issue is whether Appellant's claims 1-15, 40, 41, and 43-56, which cover a method and a system, involving no transformation performed by a *machine* and no process involving the other three statutory categories (machine, manufacture, or composition of matter),<sup>1</sup> are patentable subject matter under 35 U.S.C. § 101. So construed, Appellant's claims are unpatentable under section 101 because (i) they do not qualify as a "process" under section 101, as that term has been interpreted by case law, (ii) they seek to patent an abstract idea, and (iii) the "useful, concrete, and tangible result" test does not apply here, but the claims nevertheless do not meet that test.

Appellant's method claim 1 differs from traditional process claims in several respects. For example, the claim does not recite any particular way of implementing the steps, nor does it require any machine or apparatus to perform the steps. In addition, the method claim does not recite any electrical, chemical, or mechanical acts or results, which are typical in traditional process claims. Finally, the claim does not call for any *physical*

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<sup>1</sup> "A machine is a concrete thing, consisting of parts, or of certain devices and combination of devices." *Burr v. Duryee*, 68 U.S. 531, 570 (1863). The term "manufacture" refers to "the production of articles for use from raw or prepared materials by giving to these materials new forms, qualities, properties, or combinations, whether by hand-labor or by machinery." *Diamond v. Chakrabarty*, 447 U.S. 303, 308, 206 USPQ 193, 196-97 (1980) (quoting *American Fruit Growers, Inc. v. Brogdex Co.*, 283 U.S. 1, 11, 8 USPQ 131, 133 (1931)). A "composition of matter" by its own terms requires matter. *Chakrabarty*, 447 U.S. at 308, 206 USPQ at 196-97.

*transformation* of an article to a different state or thing. While claim 1 does perform a *transformation of data* by reordering components of a software module, it does not require any machine or apparatus to perform the steps. The question of whether any of these distinctions takes claim 1 outside the realm of patent-eligible subject matter has never been squarely addressed by the Federal Circuit. Appellant’s claims are not the type of method that the Supreme Court or Federal Circuit has ever found patentable under section 101.

(b)

*Reading the Supreme Court’s and Federal Circuit’s Precedents Together,  
A Section 101 “Process” Has Always Transformed Subject Matter,  
Whether Tangible or Intangible, Or Has Been a Process  
That Involved The Other Three Statutory Categories*

(i)

*“Process” Definition Principles*

The scope of patentable subject matter under section 101 is broad, but not infinitely broad. “Congress included in patentable subject matter *only* those things that qualify as ‘any ... process, machine, manufacture, or composition of matter, or any ... improvement thereof....’” *In re Warmerdam*, 33 F.3d 1354, 1358, 31 USPQ2d 1754, 1757 (Fed. Cir. 1994) (quoting 35 U.S.C. § 101) (emphasis added). Thus, “[d]espite the oft-quoted statement in the legislative history of the 1952 Patent Act that Congress intended that statutory subject matter ‘include anything under the sun that is made by man,’[citation omitted], Congress did not so mandate.” *Id.*

In the case where a claim is for a process, as opposed to a product, “[t]he line between a patentable ‘process’ and an unpatentable ‘principle’ is not always clear. Both are ‘conception[s] of the mind, seen only by [their] effects when being executed or performed.’” *Parker v. Flook*, 437 U.S. 584, 589, 198 USPQ 193, 198 (1978) (quoting *Tilghman v. Proctor*, 102 U.S. 707, 728 (1880)). “The holding that the discovery of [Benson’s] method could not be patented as a ‘process’ forecloses a purely literal reading of § 101.” *Flook*, 437 U.S. at 589, 198 USPQ at 197. “[W]hen a claim containing [an abstract idea] implements or applies that [idea] in a structure or process which, when considered as a whole, is performing a function which the patent laws were designed to protect (e.g., transforming or reducing an article to a different state or thing), then the claim satisfies the requirements of § 101.” *Diamond v. Diehr*, 450 U.S. 175, 192, 209 USPQ 1, 10 (1981); *see also Gottschalk v. Benson*, 409 U.S. 64, 70, 175 USPQ 673, 676 (1972) (“Transformation and reduction of an article ‘to a different state or thing’ is the clue to the patentability of a process claim that does not include particular machines.”).<sup>2</sup>

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<sup>2</sup> The principal exception to this rule, as explained *infra*, is when the machine-implemented method merely manipulates abstractions. *See Benson*, 409 U.S. at 71-72, 175 USPQ at 676-77. In addition, merely attaching a machine to an otherwise ineligible method may not be sufficient and would depend on how the machine actually implemented the recited steps. For example, if a nonstatutory claim were amended so that a recited step of registering a customer was performed by entering data into a computer rather than using a sign-up sheet, it is hard to imagine how that alone would satisfy the requirements of § 101 and convert an otherwise ineligible claim into an eligible one.

The Supreme Court, however, presumably concerned about barring patents for future, unforeseeable technologies, declined to rule on whether its precedent foreclosed any other possible avenues for a method claim to qualify as a section 101 process: “It is argued that a process patent must either be tied to a particular machine or apparatus or must operate to change articles or materials to a ‘different state or thing.’ We do not hold that no process patent could ever qualify if it did not meet the requirements of our prior precedents.” *Benson*, 409 U.S. at 71, 175 USPQ 676. Rather than rule on this question in *Benson* and *Flook*, the Supreme Court decided those cases based on the abstract idea exception to patentability. *Benson*, 409 U.S. at 71-72, 175 USPQ at 676-77; *Flook*, 437 U.S. at 594-95, 198 USPQ at 199-200.

Since *Diehr*, the Federal Circuit has reviewed several computer technology cases, and in acknowledgment of the innovations occurring in this technological field, identified a third category of method claims that qualify as a “process.” Extrapolating from the Supreme Court’s “transformation and reduction of an article” test, the Federal Circuit has held that transformation of intangible subject matter (*i.e.*, data or signals) may also qualify as a § 101 process. *See, e.g., State St. Bank & Trust Co. v. Signature Fin. Group, Inc.*, 149 F.3d 1368, 1373, 47 USPQ2d 1596, 1601 (Fed. Cir. 1998). Responding to the argument that process claims must recite a “physical transformation,” the Federal Circuit in *AT&T* ruled that “physical transformation” “is not an invariable requirement, but merely one example of how a mathematical algorithm may bring about a useful application.” *AT&T Corp. v. Excel Communications, Inc.*, 172 F.3d 1352,



1358, 50 USPQ2d 1447, 1452 (Fed. Cir. 1999). Quoting the Supreme Court’s language, “e.g., transforming or reducing an article to a different state or thing” from *Diehr*, the *AT&T* court noted the usage of “e.g.” “denotes an example, not an exclusive requirement.” *Id.* at 1359, 50 USPQ2d at 1452. *AT&T* went on to cite the transformation of intangible data signals in the method claim of *Arrhythmia Research Technology Inc. v. Corazonix Corp.*, 958 F.2d 1053, 1059, 22 USPQ2d 1033, 1038 (Fed. Cir. 1992), as an example that qualifies as a § 101 “process” in addition to the Supreme Court’s test. *See id.* at 1359, 50 USPQ2d at 1452.

Accordingly, the Federal Circuit has consistently used its own “data transformation” test in assessing the eligibility of various machine-implemented claims. In *Alappat*, the court held that “data, transformed by a machine” “to produce a smooth waveform display” “constituted a practical application of an abstract idea.” *State Street*, 149 F.3d at 1373, 47 USPQ2d at 1601. Specifically, the court in *Alappat* stated that the claimed invention as a whole was directed to a machine for “converting discrete waveform data samples into anti-aliased pixel illumination intensity data to be displayed on a display means.” 33 F.3d 1526, 1544, 31 USPQ2d 1545, 1557 (Fed. Cir. 1994) (en banc). In *Arrhythmia*, the court held “the transformation of electrocardiograph signals” “by a machine” “constituted a practical application of an abstract idea.” *State Street*, 149 F.3d at 1373, 47 USPQ2d at 1601. Specifically, the court in *Arrhythmia* stated “the number obtained is not a mathematical abstraction; it is a measure in microvolts of a specified heart activity, an indicator of the risk of ventricular tachycardia.” 958 F.2d at 1062, 22 USPQ2d at 1039. Likewise, in *State Street*, the court held that “the

transformation of data” “by a machine” “into a final share price, constitutes a practical application of a mathematical algorithm” because “a final share price [is] momentarily fixed for recording and reporting purposes and even accepted and relied upon by regulatory authorities and in subsequent trades.” 149 F.3d at 1373, 47 USPQ2d at 1601. Thus, while *Diehr* involved the transformation of a tangible object – curing synthetic rubber – Federal Circuit also regards the transformation of intangible subject matter to similarly be eligible, *so long as data or signals represent some real world activity*.

The Federal Circuit has never held or indicated that a process involving no transformation can qualify as a “process” under § 101. In fact, confronted with such claims, it has rejected them consistently. *See In re Schrader*, 22 F.3d 290, 294-295, 30 USPQ2d 1455, 1458 (Fed. Cir. 1994); *In re Grams*, 888 F.2d 835, 837, 12 USPQ2d 1824, 1826 (Fed. Cir. 1989) (rejecting claims to method of evaluating a system that incorporated a mathematical algorithm, where the only physical step was a data gathering step that was not tied to the algorithm); *In re Maucorps*, 609 F.2d 481, 484, 203 USPQ 812, 815 (CCPA 1979); *In re Meyer*, 688 F.2d 789, 796, 215 USPQ 193, 198 (CCPA 1982); *see also In re Alappat*, 33 F.3d at 1543, 31 USPQ2d at 1556 (“*Maucorps* dealt with a business methodology for deciding how salesmen should best handle respective customers and *Meyer* involved a ‘system’ for aiding a neurologist in diagnosing patients. Clearly,

neither of the alleged ‘inventions’ in those cases falls within any § 101 category.”).<sup>3</sup>

In *Schrader*, the court affirmed the 101 rejection of a method of competitively bidding on a plurality of related items, relying in part on the *Freeman-Walter-Abele* (“FWA”) test. However, consistent with *Arrhythmia*, *Alappat*, *State Street*, and *AT&T*, the court also inquired into whether Schrader’s method claim performed any kind of transformation. *Schrader*, 22 F.3d at 294, 30 USPQ2d at 1458 (“we do not find in the claim any kind of data transformation.”). The court then distinguished Schrader’s claim from the statutorily eligible claims in *Arrhythmia*, *In re Abele*, 684 F.2d 902, 214 USPQ 682 (CCPA 1982), and *In re Taner*, 681 F.2d 787, 214 USPQ 678 (CCPA 1982), pointing out that in these cases, “[t]hese claims all involved the transformation or conversion of subject matter representative of or constituting *physical activity or objects*. *Id.* (emphasis in original). *Schrader* expressly concludes that “a process claim [in] compliance with Section 101 requires some kind of transformation or reduction of subject matter.”<sup>4</sup> *Id.* at 295, 30 USPQ2d at 1459. In sum, the Federal Circuit has

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<sup>3</sup> But see *State Street*, 149 F.3d at 1376 n.14, 47 USPQ2d at 1603 n.14 (observing that “[*Maucorp* and *Meyer*] were subject to the *Benson* era *Freeman-Walter-Abele* test – in other words, analysis as it existed before *Diehr* and *Alappat*,” without addressing the fact that it was the *Alappat* decision itself that made the observation that these inventions were “clearly” nonstatutory).

<sup>4</sup> Although the FWA test is no longer considered particularly probative in the context of computer-implemented process inventions in view of *Diehr* (see, e.g., *State Street*, 149 F.3d at 1374, 47 USPQ2d at 1601 ), the erosion of FWA provides no support for the position that a non-machine

never ruled that methods without any transformation are eligible, and appears in *Schrader* to have rejected that proposition.

We believe that “process” should not be broadened so as to include any and every method that may be deemed useful. The Supreme Court’s and Federal Circuit’s articulated eligibility tests keep the interpretation of “process” *in pari materia* with the other three categories of inventions – manufacture, machine, and composition of matter. In other words, interpreting “process” as either transforming subject matter or implemented by one of the other three categories of inventions is rationally consistent with and proportional to the types of inventions patented under the other categories.<sup>5</sup> See *Tilghman v. Proctor*, 102 U.S. 707, 722 (1880) (“where the

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implemented process, not involving any transformation, might be patentable. The answer to that question is still provided by *Schrader*, and that answer, so far, is negative. While *AT&T* indicated that *Schrader* is “unhelpful” because it did not reach the question whether a “useful, concrete, and tangible result” occurred, the reason that case did not need to reach that question was because it found that *Schrader*’s method claims were unpatentable for lack of any transformation. In addition, *Schrader*’s claims did not require machine-implementation, unlike *AT&T*’s claims. See *AT&T*, 172 F.3d at 1358, 50 USPQ2d at 1452 (“*AT&T*’s claimed process” uses “switching and recording mechanisms to create a signal useful for billing purposes.”). Moreover, it is axiomatic that dicta in one Federal Circuit panel decision cannot overrule the holding of an earlier panel decision. *George E. Warren Corp. v. United States*, 341 F.3d 1348, 1351 (Fed. Cir. 2003) (“We cannot simply overrule [a prior panel] decision, even if we were persuaded . . . that it is appropriate; to overrule a precedent, the court must rule en banc” (citing *Newell Cos. v. Kenney Mfg. Co.*, 864 F.2d 757, 765, 9 USPQ2d 1417, 1423 (Fed.Cir.1988))).

<sup>5</sup> We do not propose in this decision a comprehensive rule for defining patentable subject matter in all circumstances. Rather, this decision

result or effect is produced by chemical action, by the operation or application of some element or power of nature, or of one substance to another, such modes, methods, or operations are called processes.”); *see also* *AT&T*, 172 F.3d at 1356, 50 USPQ2d at 1450 (“any step-by-step process, be it electronic, chemical, or mechanical, involves an ‘algorithm’ in the broad sense of the term.”). Accordingly, we do not believe that the boundaries of “process” should be so expansive as to accommodate all “useful” methods.

(ii)

*“Process” Definition and Appellant’s Claims*

To reiterate, we believe that “process” should not be broadened so as to include any method that may be deemed useful, such as Appellant’s method and system claims that *do not require a machine* to perform a transformation (i.e., *reordering of software components*). Following *Schrader*, Appellant’s claims are unpatentable under section 101. The claims are similar to those rejected in *Schrader*, while distinguishable from *Arrhythmia*, *Alappat*, *State Street*, and *AT&T*. The claims do not transform any *physical* article to a different state or thing. The *reordering of components of a software module* produced by the claims, while perhaps “useful” in one sense, is simply not the product of any transformation as understood in the case law (i.e., transformation or conversion of subject matter representative of or constituting *physical activity or objects* or transformation of data or signals *by a machine*). Further, the claims do not

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illustrates that Appellant’s claims fall outside the currently existing tests for eligibility and sees no reason to expand the existing tests to cover Appellant’s claims.

recite a process that employs the other statutory categories. Accordingly, the claims fail to meet any of the conditions set forth in the case law of either the Supreme Court or Federal Circuit.

(c)  
*Appellant's Claims Run Afoul of the "Abstract Idea" Exception*

(i)  
*"Abstract Idea" Exception Principles*

The Supreme Court has held that "[e]xcluded from such patent protection are laws of nature, natural phenomena, and abstract ideas." *Diehr*, 450 U.S. at 185, 209 USPQ at 7. "An idea of itself is not patentable." *Diehr*, 450 U.S. at 185, 209 USPQ at 7 (quoting *Rubber-Tip Pencil Co. v. Howard*, 20 Wall. 498, 507, 22 L.Ed. 410 (1874); *Benson*, 409 U.S. at 67, 175 USPQ at 675 ("[M]ental processes, and abstract intellectual concepts are not patentable."); *see also id.* at 71, 175 USPQ at 676 ("It is conceded that one may not patent an idea.")). In contrast, "[i]t is now commonplace that an *application* of a law of nature or mathematical formula [or abstract idea] to a known structure or process may well be deserving of patent protection." *Diehr*, 450 U.S. at 187, 209 USPQ at 8 (emphasis in original).

Clever claim drafting cannot circumvent these principles. That is, even when a claim appears to apply an idea or concept as part of a seemingly patentable process, one must ensure that it does not in reality seek patent protection for that idea in the abstract. *Diehr*, 450 U.S. at 191, 209 USPQ at 10. Similarly, one cannot patent a process that comprises "every substantial practical application" of an abstract idea, because such a patent "in practical

effect would be a patent on the [abstract idea] itself.” *Benson*, 409 U.S. at 71-72, 175 USPQ 676.<sup>6</sup> Such limitations on process patents are important because without them, “a competent draftsman [could] evade the recognized limitations on the type of subject matter eligible for patent protection.” *Diehr*, 450 U.S. at 192, 209 USPQ at 10.

(ii)

*“Abstract Idea” Exception and Appellant’s Claims*

Because Appellant’s claim 1 is completely untethered from any sort of structure or physical step, it is directed to a disembodied concept. In other words, the claim is nothing but a disembodied abstract idea until it is instantiated in some physical way so as to be limited to a practical application of the idea. For example, claim 1 does not specify whether the entity performing the steps of receiving and reordering is a computer, a human, or something else. Accordingly, the claim is so broad that it is directed to the abstract idea itself, rather than a practical implementation of the concept. In addition, the claims are “so abstract and sweeping” that they would “wholly pre-empt” all applications (whether performed by a machine or a human) that are directed to reordering components of a software module to remove at least some of the backward references. *See Benson*, 409 U.S. at

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<sup>6</sup> The observation in *State Street* that “[w]hether the patent’s claims are too broad to be patentable is not to be judged under § 101, but rather under §§ 102, 103, and 112” did not, nor could it, overrule the Supreme Court’s pre-emption doctrine. *See State Street*, 149 F.3d at 1377, 47 USPQ2d at 1604. Rather, pre-emption was not at issue in *State Street* since the claim in that case was particularly confined to a machine implementation, and did not suffer from the same defect as Appellant’s claim.

68-72, 175 USPQ at 675-677; *see also Alappat*, 33 F.3d at 1544, 31 USPQ2d at 1558 (quoting *Benson*).

(iii)

*“Abstract Idea” Exception and Process Claims Without Means or Structure*

It is true that process claims are not necessarily required to recite the means or structure for performing the claimed steps. *See, e.g., AT&T*, 172 F.3d at 1359, 50 USPQ2d at 1452. But process claims that *do not require any machine implementation*, and are thus intrinsically more abstract than product claims or method claims reciting structure, will often need to recite some sort of transformation act (i.e., transformation or conversion of subject matter representative of or constituting *physical activity or objects*) in order to clearly show that the method claim is for some specific application of the idea and represents something more than just a concept. *See, e.g., id.* at 1358, 50 USPQ2d at 1452 (noting that “AT&T’s claimed process” uses “switching and recording mechanisms to create a signal useful for billing purposes.”). Here, Appellant’s claim lacks the “particularly claimed combination of elements” recited in *Alappat*’s claim, the transformation of data by a machine recited in *State Street*’s claim, the transformation of electrical signals in Arrhythmia’s method claim, or the transformation of data useful for billing purposes in *AT&T*’s method claim, and therefore lacks those characteristics that separate a practical application of an idea from just the idea itself.



(d)

*The Federal Circuit's "Useful, Concrete, and Tangible Result" Test  
Has Never Been Applied to This Type of Claim;  
Nor Would Appellant's Claims Satisfy That Test If Applied*

(i)

*Appellant's Claims Do Not Require a Machine; And  
State Street's "Useful, Concrete, and Tangible Result" Test  
Is Limited to Machines and Machine-Implemented  
Methods That Transform Data*

As discussed above, the development of the Federal Circuit's data transformation test was in response to a series of cases concerning the eligibility of machines and machine-implemented methods employing a mathematical algorithm. In assessing the eligibility of these specific types of claims, the court adopted a rule requiring such claims to produce a "useful, concrete and tangible result." *State Street*, 149 F.3d at 1373, 47 USPQ2d at 1600-1601. Based on inferences drawn from the apparent sweep of the useful, concrete, and tangible result test in combination with *State Street*'s repudiation of any business method exception to patentability, applicants have been filing claims for "processes" that are not traditional industrial processes, which contain no physical limitations and do not require any transformation or conversion of subject matter representative of or constituting *physical activity or objects* nor transformation of data or signals *by a machine*. But this new brand of claims is beyond the purview of the Federal Circuit's holdings. The cases applying the useful, concrete, and tangible result test have all been confined to machine implementation of mathematical algorithms. Thus, the Federal Circuit has never stated that this is the general test for patent eligibility. In other words, any claim that might

arguably yield a “useful, concrete, and tangible result” is not necessarily statutory subject matter.

Specifically, the “useful, concrete, and tangible result” test first appeared in *Alappat*, which states: “This [claimed invention] is not a disembodied mathematical concept which may be characterized as an ‘abstract idea,’ but rather a specific machine to produce a useful, concrete, and tangible result.” *Alappat*, 33 F.3d at 1544, 31 USPQ2d at 1557. The court in *Alappat* thus devised a standard to partition patentable inventions using mathematical algorithms from claims for disembodied mathematical concepts. *State Street* also involved claims to a machine employing a mathematical algorithm, but in this instance for managing a mutual fund investment portfolio. Finding the claim to be valid under § 101, *State Street* held that “transformation of data ... by a machine through a series of mathematical calculations into a final share price, constitutes a practical application of a mathematical algorithm, formula, or calculation, because it produces ‘a useful, concrete and tangible result.’” *State Street*, at 1373, 47 USPQ2d at 1601. Likewise, *AT&T* also ties this test to applications of mathematical algorithms: “Because the claimed process applies the Boolean principle to produce a useful, concrete, and tangible result without preempting other uses of the mathematical principle, on its face the claimed process comfortably falls within the scope of § 101.” *AT&T*, 172 F.3d at 1358, 50 USPQ2d at 1452; *see also id.* at 1361, 50 USPQ2d at 1453 (concluding that “the focus is understood to be not on whether there is a mathematical algorithm at work, but on whether the algorithm-containing invention, as a whole, produces a tangible, useful result.”).

However, the Federal Circuit has *never* suggested that its “useful, concrete, and tangible result” test was applicable outside the context of data transformation using a mathematical algorithm. Rather, the Federal Circuit has consistently and specifically linked this test to inventions that perform “a series of mathematical calculations” to transform data. Indeed, the Federal Circuit recently noted that the test was specifically devised to handle eligibility issues for claims encompassing mathematical algorithms, thereby suggesting that it is *not* a general test for eligibility. See *NTP, Inc. v. Research In Motion, Ltd.*, 418 F.3d 1282, 1324, 75 USPQ2d 1763, 1795 (Fed. Cir. 2005) (“The *requirement* that a process transform data and produce a ‘tangible result’ was a standard devised to prevent patenting of mathematical abstractions” (citing *AT&T*, 172 F.3d at 1359, 50 USPQ2d at 1452) (emphasis added)). Furthermore, the “useful, concrete, and tangible result” test fails to resolve the tension between *State Street* and *Schrader*.

In *LabCorp* the dissent suggested that, if applied as a general criterion, the “useful, concrete, and tangible result” test would conflict with prior Supreme Court decisions. *Lab. Corp. of Am. Holdings v. Metabolite Labs., Inc.*, 126 S. Ct. 2921, 2928, 79 USPQ2d 1065, 1070 (2006) (Breyer, J., dissent from dismissal as improvidently granted) (observing that the Federal Circuit’s statement that “a process is patentable if it produces a ‘useful, concrete, and tangible result’ . . . , if taken literally, . . . would cover instances where this Court has held the contrary”). Accordingly, the best reading of the precedent may limit that test to machines and machine-implemented methods using mathematical algorithms to transform data, rather than embracing it as a general test for eligibility.

Accordingly, our understanding of the precedents at present is: Any computer program claimed as a machine implementing the program (*Alappat, State Street*) or as a method of a machine implementing the program (*AT&T*), is patentable if it transforms data and achieves a useful, concrete and tangible result (*State Street, AT&T*). Exceptions occur when the invention in actuality pre-empts an abstract idea, as in a mathematical algorithm (*Benson*, 409 U.S. at 71-72, 175 USPQ at 676-677). Because Appellant's claims do not require a machine implementing a mathematical formula to transform data, the "useful, concrete, and tangible result" test is irrelevant to considering the eligibility of Appellant's claims.

While *State Street* put the "ill-conceived" business method exception to patentability "to rest," 149 F.3d at 1375, 47 USPQ2d at 1602 it did not suggest that any and all types of "useful" methods for doing business are statutory subject matter. In accordance with the Supreme Court's and Federal Circuit's precedent, business method claims, like any method claim, must either be machine-implemented or transform subject matter into a different state or thing. Thus, while a process for transforming data to assist in differential billing for telephone users is eligible (*AT&T*), a method for promoting sales using a "buy one, get one free" scheme does not qualify as a "process," regardless of any useful or tangible result it produces.

(ii)

*Appellant's Claims Do Not Produce a  
Useful, Concrete, and Tangible Result*

Even if we accept as a given, that Appellant has established the “utility” of the invention, “utility” does not automatically establish that the result is also tangible and concrete.

The receiving and reordering steps of claim 1 are performed on components that are software and/or data structures per se which are merely abstractions represented as data. Therefore, even if the results of the receiving and reordering steps were relevant to establishing a tangible result for the claim as a whole, these steps operate on abstractions and simply can not produce a tangible result.

As discussed *supra*, our review of the claims finds they produce a mere rearrangement of software and/or data structures per se. To reiterate, Appellant’s Specification states: “The specification and drawings are ... to be regarded in an illustrative rather than [a] restrictive sense” (Specification 32, ll. 6-8). Therefore, we find Appellant’s intent is to cover all alternatives, modifications, and equivalents included within the spirit and scope of the invention as defined by the claims. Since the language of claim 1 does not preclude humans from performing the steps of the method, then based on Appellant’s statements, we must conclude that claim 1 is intended to include all possible ways of performing the reordering step of the method, as the result of the claimed process.

We see the question before us to be, whether reordering program data produces a useful, tangible, and concrete result? As discussed *supra*, the

Federal Circuit regards the transformation of intangible subject matter to be such a useful, tangible, and concrete result, so long as data or signals represent some real world activity. However, we do not find data or signals in claim 1 which represent a real world activity such as found in *Arrhythmia*, *Alappat*, or *State Street*.

Therefore, we conclude that Appellant's claims 1-15, 40, 41, and 43-56, which produce a rearrangement of program data, fail to apply their abstract ideas to produce a useful *and* concrete *and* tangible result. Thus, claims 1-15, 40, 41, and 43-56 fall outside the scope of § 101.

(3)

*Rejection of claims 1-15, 40, 41, and 43-56 under 35 U.S.C. § 101*

Claims 1-15, 40, 41, and 43-56 are rejected under 35 U.S.C. § 101 because the claimed invention is directed to non-statutory subject matter.

For the same reasons discussed *supra* with respect to independent method claim 1, we conclude the system of independent claim 9 covers (“preempts”) every substantial practical application of the abstract idea. We conclude that the claim is so broad that it is directed to the “abstract idea” itself, rather than a practical implementation of the concept. Thus, the claimed process falls outside the scope of § 101.

Additionally, for the same reasons discussed *supra* with respect to claim 1, we conclude the method of claim 55 does not apply its abstract idea to produce a useful, concrete, tangible result.

Similarly, dependent claims 2-8, 10-15, 40, 41, 43-54, and 56 merely require that anyone or anything reorder or rearrange the claimed components

that are software and/or data structures per se. For the same reasons discussed *supra* with respect to independent claims 1, 9, and 55, we conclude the methods and systems of dependent claims 2-8, 10-15, 40, 41, 43-54, and 56 fall outside the scope of § 101.

### CONCLUSIONS OF LAW

Appellant has failed to establish that the Examiner erred in rejecting claims 1-41, and 43-60 under 35 U.S.C. § 102(b) as being anticipated by Levine.

Appellant has failed to establish that the Examiner erred in rejecting claim 42 as being unpatentable under 35 U.S.C. § 103(a) over Levine in view of Breslau.

Therefore, claims 1-60 are not patentable over the prior art of record.

### DECISION

The decision of the Examiner rejecting claims 1-41, and 43-60 under 35 U.S.C. § 102 is affirmed. The decision of the Examiner rejecting claim 42 under 35 U.S.C. § 103 is also affirmed. We have entered a new ground of rejection against claims 1-15, 40, 41, and 43-56 under 37 C.F.R. § 41.50(b).

37 C.F.R. § 41.50(b) provides that, “[a] new ground of rejection pursuant to this paragraph shall not be considered final for judicial review.”

37 C.F.R. § 41.50(b) also provides that the Appellant, *WITHIN TWO MONTHS FROM THE DATE OF THE DECISION*, must exercise one of

the following two options with respect to the new grounds of rejection to avoid termination of proceedings as to the rejected claims:

- (1) Submit an appropriate amendment of the claims so rejected or new evidence relating to the claims so rejected, or both, and have the matter reconsidered by the examiner, in which event the proceeding will be remanded to the examiner ...
- (2) Request that the proceeding be reheard under 37 C.F.R. § 41.52 by the Board upon the same record ...

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED  
37 C.F.R. § 41.50(b).

KIS

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